ZMUDZIŃSKI, T.

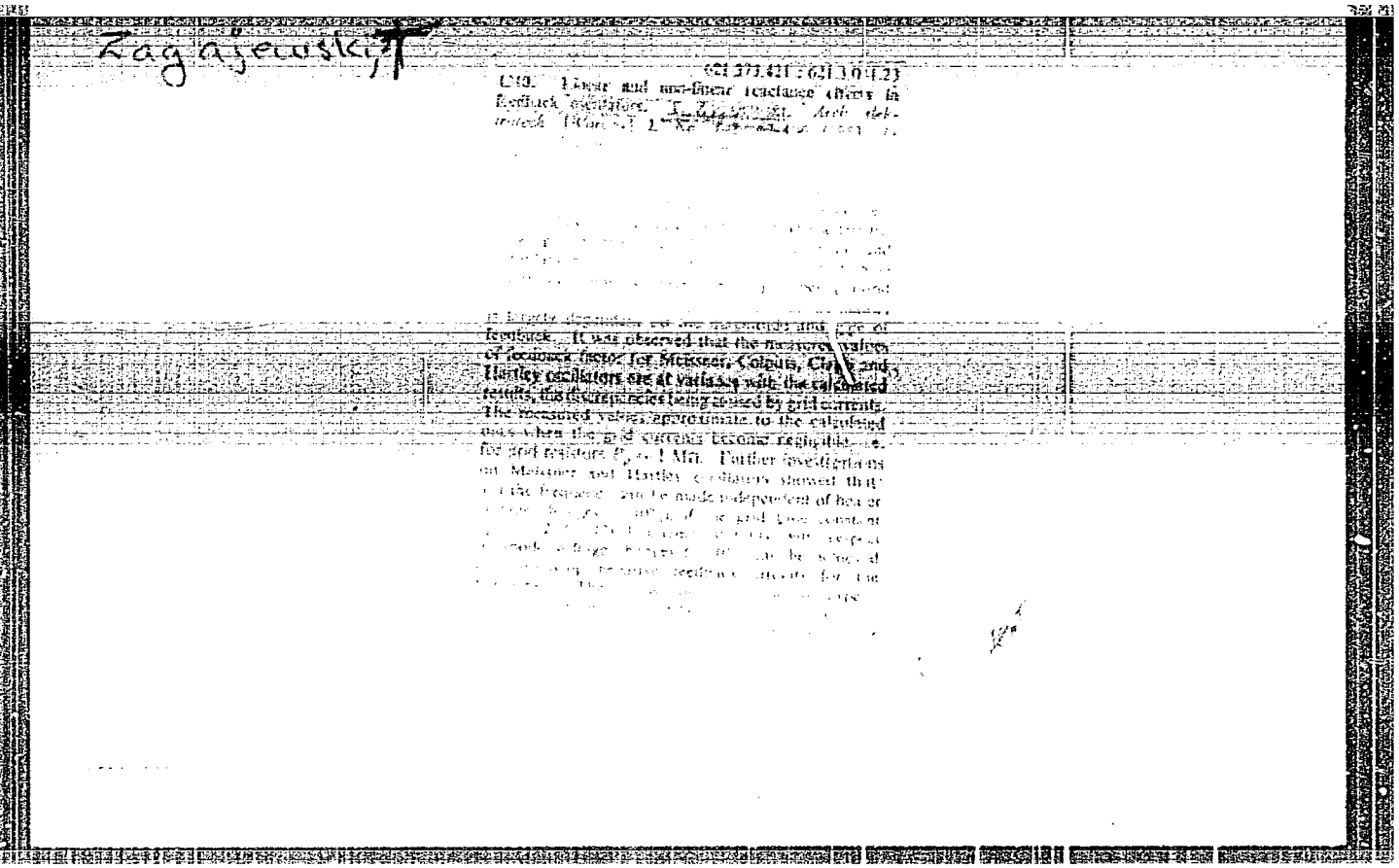
Electrical Engineering Abst.
Vol. 57 No. 675
Mar. 1954
Electronics

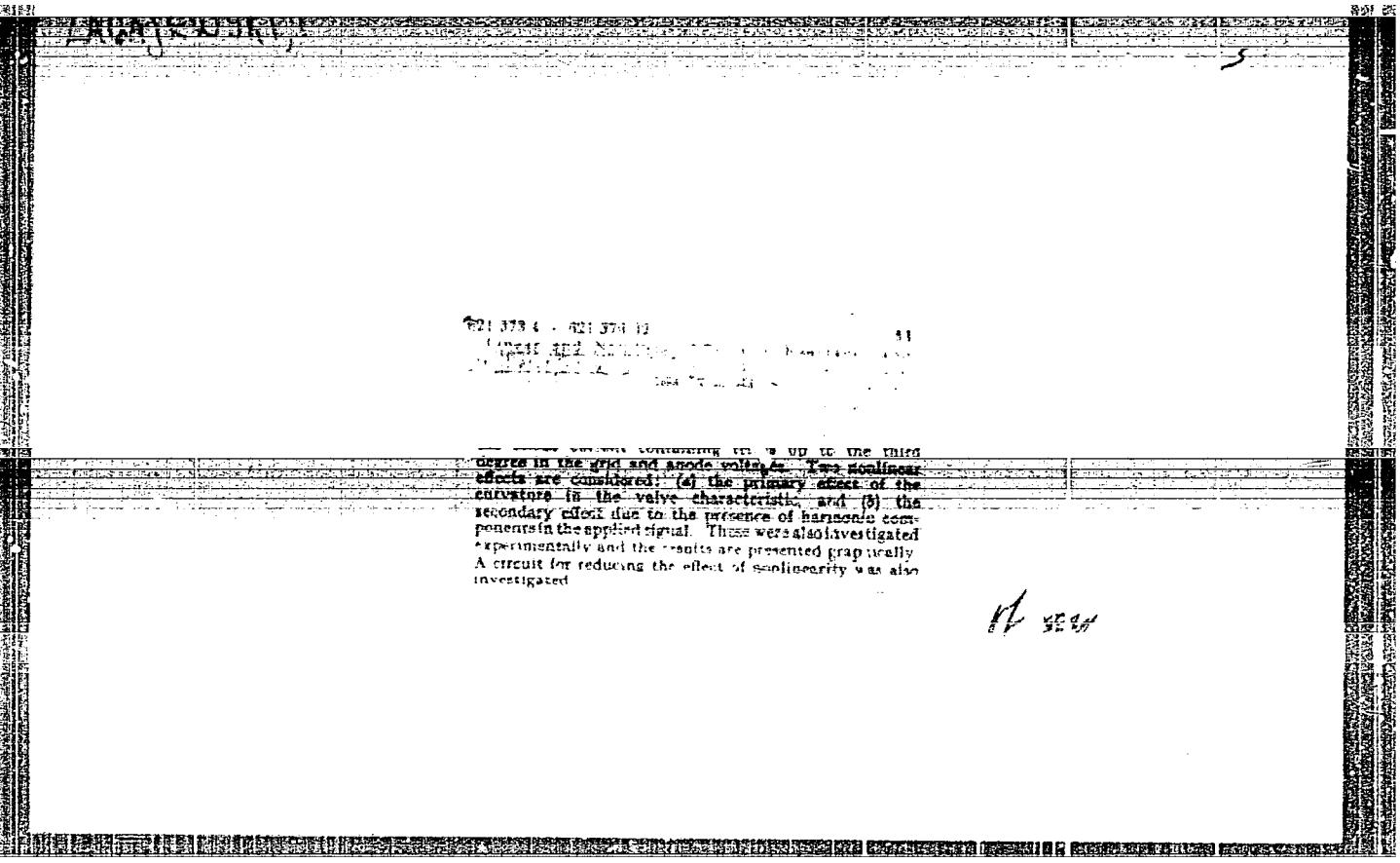
6-4-54

1197. [redacted] in reactance valve circuits. T. Zmudziński. *Arch. elektrotech.* [Warsaw] I, No. 2, 151–78 (1952) In Polish.

Two types of non-linearity were investigated both analytically and experimentally. It is shown that the primary non-linear effect is caused by the change in the average slope of a valve, the equivalent reactance either increasing or decreasing proportionately to the square of the a.c. anode voltage and the square of the feedback factor. This effect can either be reduced by choosing proper operating conditions, or compensated by means of a regulator network. The secondary effect, which appears only in the presence of harmonics in the anode voltage, also causes a variation in the equivalent reactance and resistance of the circuit. A considerable reduction of this effect is achieved by employing a system where the feedback factor decreases with frequency, e.g. RC or LR. The theory is corroborated by experiments with a heptode (ELF) at 1 kc/s for CR and RC circuits. A comprehensive summary in English is included.

R. S. SIDOROWICZ





ZAGAJEWSKI, T.

POLAND/Radio Physics - General I-1

Abs Jour : Ref Zhur - Fizika, No 6, 1958, No 13729

Author : Zagajewski T.
Inst : Department of Industrial Electronics, Polytechnic Institute of Silesia in Gliwice, Poland
Title : Time Constant of Oscillations and Nonlinear Distortion in Vacuum Tube Oscillators

Orig Pub : Arch. elektrotechn., 1957, 6, No 3, 395-419

Abstract : The author considers the speed of a dynamic buildup of generator oscillations with a positive value of increment from a state of interrupted oscillation. The characteristic introduced is the concept of the settling time of the oscillations, which is defined as the time during which the amplitude increases from 0.1 to 0.9 of the steady-state oscillation amplitude. Relations are given for the connection between this quantity and the linear distortion of the oscillator. The resultsof suitable experiments, carried out to verify the obtained relationships, are discussed. The detailed analysis

Card : 1/2

POLAND/Radio Physics - General I-1

Abs Jour : Ref Zhur - Fizika, No 6, 1958, No 13729

is made of the establishment of oscillations in vacuum tube oscillators, whose characteristics have the form

$$i = S_1 u - S_n u^n$$

for odd n and

$$i = S_1 u - S_n |u| u^{n-1}$$

for even n. Bibliography, 7 titles.

Card : 2/2

PHASE I BOOK EXPLOITATION 943

Zagajewski, Tadeusz, Doctor of Engineering, Professor

Nadajniki radiowe (Radio Transmitters) Warsaw, PWT, 1958. 478 p. 2,629 copies printed.

Reviewer: Ryzko, Stanislaw, Doctor of Engineering, Professor; Scientific Ed. of Publishing House: Kutzner, J., Engineer; Tech. Ed.: Bochenski, W.

PURPOSE: The book is intended for engineers and technicians working in telecommunications and for students of higher technical schools.

COVERAGE: The author states that his intention is to give a complete and systematic description of the operation, design, construction and measurement of radio transmitting equipment. Various types of radio transmitters are described. This 1958 edition has revised and modernized the material contained in the two previous editions of 1948 and 1950. No personalities are mentioned. There are 33 references, of which 12 are Soviet, 10 English, 6 Polish, 4 German and 1 French.

Card 1/16

TABLE OF CONTENTS:

Radio Transmitters 943

AVAILABLE: Library of Congress

Card 16/16

JP/fal
12/30/58

ZAGAJEWSKI, T.

On nonlinear feedback loop amplifiers. Archiw elektrotech 11 no.3:389-399 '62.

1. Katedra Elektroniki Przemyslowej, Politechnika, Gliwice.

ZAGAJEWSKI, T

"Optimum parameters of an R-C oscillator with a Wien bridge."

p.273 (Archiwum Elektrotechniki Vol 7, No. 2, 1958, Warsaw, Poland)

Monthly Index of East European Accessions (EEAI) LC, Vol, 8, No.1 Jan 59

22601

P/034/60/000/012/001/004
D235/D302

9,2100 (1137, 1159, 1385)

AUTHOR: Zagajewski, Tadeusz, Professor, Doctor of Engineering

TITLE: Measurement of time constant of resistors up to 100 ohms by the resonance method

PERIODICAL: Pomiary, Automatyka, Kontrola, no. 12, 1960, 469-472

TEXT: The method is based on the J. K. Clapp circuit with a generator (Ref. 2: An induction-capacitance oscillator with unusual frequency stability. Proceed. of IRE, 1948, t. 36, s 356). With this arrangement it is possible to measure the time constant of a resistor with an accuracy of 3 - 10%. In the introduction, the author gives a review of a few standard methods for measuring parameters of resistors, pointing out the difficulties met in all methods. To the best of the author's knowledge, there is nothing in technical literature on the subject of using the resonance bridge for determining resistor parameters. In the experiment a self-inducting generator was used in order to ensure better accuracy and sensitivity. After briefly describing Clapp's circuit, the

Card 1/5

Measurement of time constant...

author in

$$\omega^2 = \frac{1}{LC\left[1+\frac{L_0}{L}\left(1-\frac{C_0 R^2}{L_0}\right)\right]}\left[1+\frac{C}{C_1}+\frac{C}{C_0}\right] = \frac{1+\frac{C}{C_1}+\frac{C}{C_0}}{LC\left(1+\frac{\tau}{\tau_N}\right)} \qquad (9)$$

gives the frequency of the generator providing the following conditions are satisfied:

$\frac{\omega res}{\omega o} \leqslant 1$; $(\omega res\ Co\ R)^2 \ll 1$; and

$\tau_N = \frac{L}{R}$; $\tau \approx \tau_L - \tau_C$; - time.

The slope of the generating valve is given by

$$S_0 = \frac{R}{L_0 + L}\left[C_0 + \left(1+\frac{C_0}{C}\right)C_1\right] \qquad (10)$$

Card 2/5

Measurement of time constant...

The most satisfying frequency for the generator is in the region 400 - 600 kc/s. Frequency change was measured by bringing the frequency to a constant value by changing the capacitance in the circuit. Fig. 7 gives the working circuit of the system. Rx is the tested resistor; RN - standard resistor of constant inductance independent of Rx. The generator oscillated with good repeatability for Rx between 0 - 100 ohms. The frequency was controlled by C generally near 600 kc/s. Frequency was stable for long enough to take measurements. Each measurement was taken twice, with:

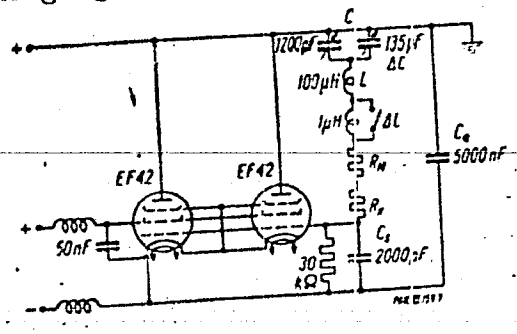


Fig. 7

a) RN = Rx ; Rx = 0 ; b) Rx = Rx ; RN = 0 .

This ensures a constant value of resistance in the circuit. Fig. 8

Card 3/5

Measurement of time constant...

gives a block diagram of the complete experiment. Standardization of the circuit was performed by connecting Δ L (Fig. 7) and noting Δ C necessary to bring the frequency to the previous value. Accuracy of standardization was compared with the measurements using meters produced by the firm Rohde & Schwartz [Abstracter's note: No further data given]. Their meters give an accuracy of 1%. Results obtained by both methods were within 1 - 3%. The author thinks that with better stabilization of power supply and generator, it is possible to achieve accuracy better than the estimated 3 - 10%. Generally, the results as obtained by measurements agreed with the values as given by the manufacturers. Some of the results are given in Table II. The author thanks the Head of the Zakład optyki i mechaniki precyzyjnej politechniki śląskiej (Department of Optics and Precision Mechanism, Silesian

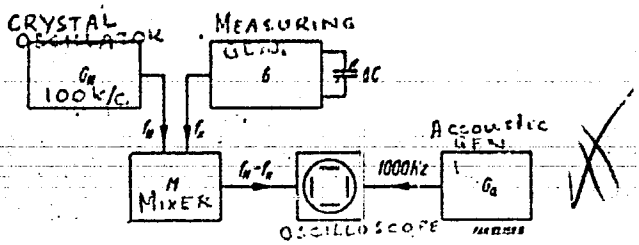


Fig. 8

Card 4/5

Measurement of time constant...

Polytechnic), Engineer E. Romer and Engineer J. Wejchonig for their cooperation in preparing the experiment. There are 6 figures, 2 tables and 7 references: 1 Soviet-bloc and 6 non-Soviet-bloc. The references to the English-language publications read as follows: J. K. Clapp: An inductance-capacitance oscillator with unusual frequency stability. Proc. of IRE. 1948, t. 36, s. 356; J. M. Diamond, H. Polushkin: Residual reactance bridge. IRE Trans. Instr. 1957, t. 1, nr. 4, s 260; G. H. Rayner, L. H. Ford: The a.c. properties of resistors and potential dividers at power and audio frequencies and their measurement. Journ. Sc. Instr. 1957, t. 34, s. 190.

ASSOCIATION: Katedra elektroniki przemysłowej politechniki Śląskiej, Gliwice (Department of Industrial Electronics, Silesian Polytechnic, Gliwice)

Table II

Opornik:	Stałe czasowe oporników w 10^{-9} s				
	A	B	C	D	E
Dekada 0,1 Ω	+ 169	–	+ 316	+ 293	–
1 Ω	+ 48,3	+ 48,8	+ 45,1	+ 47,6	+ 679
10 Ω	+ 10,5	+ 11,3	+ 8,48	+ 8,77	+ 49
100 Ω	+ 1,92	+ 1,92	+ 10,9	+ 3,37	+ 3,7

P/019/60/009/01/02/012

AUTHOR: Zagajewski, T.

TITLE: Optimum Parameters of T-Network RC Tube Oscillators

PERIODICAL: Archiwum Elektrotechniki, 1960, Vol. 9, No. 1, pp. 17 - 52

TEXT: The author analyses the nonlinear phenomena in the tube oscillators with T-networks, and determines the optimum circuit parameters necessary to obtain the smallest nonlinear distortions. Single and double T-networks are computed with the aid of the matrix calculus. Computing formulas are given for tube oscillators with a positive and negative feedback through RC circuits. The analysis proves that optimum parameters can be found for any given oscillatory system to assure the least nonlinear distortions of the oscillator. The theoretical findings were confirmed by measurements. There are 26 sets of diagrams and 16 references, 10 of which are English, 5 Polish and 1 Italian.

ASSOCIATION: Katedra Elektroniki Przemysłowej Politechnika Śląska w Gliwicach (Chair of Industrial Electronics at the Silesian Polytechnic in Gliwice)

SUBMITTED: September 21, 1959

Card 1/1

P/0019/64/013/001/0025/0042

ACCESSION NR: AP4039450

AUTHOR: Zagajewski, T.

TITLE: A generalized principle of the duality of electrical circuits and some of its applications

SOURCE: Archiwum elektrotechniki, v. 13, no. 1, 1964, 25-42

TOPIC TAGS: electrical circuit, electrical circuit duality, RC circuit, selective RC circuit, network analysis, ladder filter, linear network, inversion resistance

ABSTRACT: The concept of the duality of electrical circuits is very well known as a property of two-terminal networks or electrical networks resulting from the similarity of formulas determining current and voltage in mutually corresponding elements. This includes, for example, impedance and conductance, and capacitance and inductance for a closed circuit and current node. In addition to the similarity of the formulas, it is necessary that the numerical values of the binary magnitudes be linked by some constant, called the inversion resistance R_i, which leads to the formulas $u = R_i^2 \cdot i$, $R = R_i^2 \cdot G$, $L = R_i^2 \cdot C$ lub $C = \frac{1}{R_i^2} L$.

Card 1/3

ACCESSION NR: AP4039450

The dual networks defined in this way are rarely encountered in practice. The author proposes a generalized determination of a network's duality which should satisfy the following requirements: (1) the networks are topologically binary; (2) the mutually corresponding elements af both dual networks should be linked by the following relationships between the voltage in one circuit and current in the other as well as between the impedance of the k-th element in one circuit and admittance of the k-th element in the second $\hat{Z}_k = \hat{Z}_t^1 \cdot \hat{Y}_k$, where Z_t is the transform impedance and Z_1 is the inversion impedance. These formulas can be used when dealing with complex numbers. If both Z_t and Z_1 have real values, then a known form of duality is obtained, actually a duality with an actual inversion. It can be proven that identical transients are inherent to dual networks, i.e. the current transient of one network is simultaneously the voltage transient of the other. It can be proven by analogy that neither one of these circuits is the privileged one. The above derived relationships are obligatory for both circuits. The properties can be made use of when converting tube circuits into transistorized ones. The electron tube and transistor are mutually dual in the presence of an actual diversion. If an RC network is taken as a four-terminal feedback network, another mutually dual RC four-terminal network (with dummy inversion) can be found for it without undue difficulty, and two mutually dual circuits (tube and transistor), which will have identical properties, can be assembled. Original article has: 8

Card 2/3

ACCESSION NR: AP4039450

figures, 3 tables and 24 equations.

ASSOCIATION: Katedra Elektroniki Przemyslowej Politechniki Slaskiej (Department of Industrial Electronics, Silesian Polytechnic Institute)

SUBMITTED: 26Sep63 DATE ACQ: 18Jun64 ENCL: 00

SUB CODE: EE, EC NO REF SOV: 000 OTHER: 010

Card 3/3

ACC NR: AP7005543 (A) SOURCE CODE: PO/0095/66/014/009/0913/0918

AUTHOR: Zagajewski, T. --Zagayevskiy, T.

ORG: Department of Industrial Electronics, Silesian Technical University, Gliwice (Katedra elektroniki przemyslowej, Politechnika Slaska)

TITLE: Dual and autodual electric networks with uniformly distributed parameters

SOURCE: Polska akademia nauk. Bulletin. Serie des sciences techniques, v. 14, no. 9, 1966, 913-918

TOPIC TAGS: electric network, electric current, current transfer function, voltage transfer function, autodual electric network, dual electric network

ABSTRACT: The principle of duality, earlier applied to planar networks with lumped parameters, is extended to electric networks with distributed parameters, with similar results. It is shown that the voltage transfer function and current transfer function of such two dual networks are identical. Some electric networks with distributed parameters have dual properties with respect to themselves. Such networks, called autodual, represent special cases of dual electric networks. Orig. art. has: 5 diagrams, 1 table, and 16 formulas. [Based on author's abstract] [KP]

SUB CODE: 09/SUBM DATE: 03May66/ORIG REF: 003/OTH REF: 003/

Card 1/1

ZAGAJEWSKI, T.

Generalized principle of duality of electric circuits and some of its applications. Archiw elektrotech 13 no.1:25-42 '64.

1. Department of Industrial Electronics, Silesian Technical University, Gliwice.

ZAGAJEWSKI, T.

Generalized duality concept of electrical networks. Bul Ac Pol tech 11 no.9:491-497 '63.

1. Department of Industrial Electronics, Silesian Technical University, Gliwice.

ZAGAJEWSKI, T.

Applications of generalized duality concept of networks to conversion of vacuum-tube RC circuits in transistor circuits. Bul Ac Pol tech 11 no. 12: 777-780 '63.

1. Department of Industrial Electronics, Silesian Technical University, Gliwice.

ZAGAJEWSKI, T.

Optimization of tube generators with regard to frequency stability and nonlinear distortions. Archiw elektrotech. 12 no.3:547-567 '63

1. Katedra Elektroniki Przemyslowej, Politechnika Slaska, Gliwice.

ZAGAJEWSKI, T.

The frequency instability of RC oscillators caused by non-linear effects. Bul Ac Pol tech 11 no.4:195-200 '63.

1. Department of Industrial Electronics, Silesian Technical University, Gliwice.

ZAGAJEWSKI, T.

Nonlinear positive feedback amplifier. Bul Ac Pol tech 10 no.9:559-561 '62.

1. Department of Industrial Electronics, Silesian Technical University, Gliwice.

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P/019/62/011/003/001/008
D289/D308

9,3240

AUTHOR: Zagajewski, T.

TITLE: Amplifiers with non-linear feedback

PERIODICAL: Archiwum elektrotechniki, v. 11, no. 3, 1962, 389-396

TEXT: The author considers an inertialess amplifier with gain k_u whose feedback loop includes a four-terminal network with a known characteristic $u_r = f_1(u_2)$. The input and output voltages are denoted by u_1 and u_2 respectively. A formula is deduced for the total gain k'_u, which, for strong negative feedback, can be replaced by an approximate relation $u_1 = -f_1(u_2)$. If the four-terminal network is connected with the output through a resistive voltage divider replacing u_2 by au_2, then

$$u_2 = -\frac{1}{a} f_1^{-1}(u_1) \qquad (10)$$

Consequently the shape of the non-linear amplifier characteristic

Card 1/2

can be varied continuously by adjusting the voltage divider. If a non-linear four-terminal network is inserted in a positive feedback circuit then the general form of the characteristic cannot be determined, but one can determine the characteristics graphically starting from

$$u_1 = \frac{u_2}{k_u} - f_1(u_2) \qquad (11)$$

for which a method is given. In some cases analytical determination is possible. For $u_r = cu_2^3$ the author finds

$$u_2 = k_u(u_1 + ck_u^3 u_1^2 + 2c^2k_u^5u_1^3) \qquad (16)$$

The terms of higher orders can be made small by limiting input voltage. There are 4 figures.

ASSOCIATION: Katedra elektroniki przemysłowej politechniki Śląskiej (Department of Industrial Electronics, Silesian Polytechnic)

SUBMITTED: April 9, 1962

Card 2/2

ZAGAJEWSKI, T.

Electric symmetry of non-linear circuits with symmetrical structure.
Archiw elektrotech 10 no.3:711-721 '61.

ZAGAJEWSKI, Tadeusz, prof., dr., inz.

Resonance method for time constant measurements of resistors greater than 200 O-mega. Pomiary 7 no.12:486-487 D '61.

1. Katedra Elektrotechniki Przemyslowej, Politechnika Slaska, Gliwice.

(Electric resistance)

P/034/61/000/012/002/003
D265/D305

AUTHOR: Zagajewski, Tadeusz, Professor, Doctor of Engineering

TITLE: A resonance method for the time constant measurements of resistors greater than 200 Ω

PERIODICAL: Pomiary, Automatyka, Kontrola, No. 12, 1961, 486-487

TEXT: The method described in this paper is based on the dependence of the resonant frequency of the parallel circuit on the time constant of the resistor connected in parallel. The changes of frequency, however, are too small (10^{-3} - 10^{-5}) and, therefore, a generator system is used to measure accurately the frequency changes. The circuit diagram of the Meissner generator is shown in Fig. 3. Various attempts are described in order to eliminate the non-linear characteristics of the generator's valves and a simple method to overcome this effect is given in this paper. This method involves two measurements at the same amplitude: The first with a resistor of known resistance and known as a negligibly small time constant connected in parallel with the generator circuit, and the second

Card 1/ 3

A resonance method for ...

one with the same value of resistance, but with an unknown value of the time constant. The difference between the two frequencies or capacitance thus obtained will be proportional to the difference of two time constants, and the non-linear effects will be eliminated. The accuracy of the above method depends on the choice of the resistances used for comparison. Reference is made in this paper to the author's previous publication: (P.A.K. no. 12, 1960, 369-372). There are 4 figures.

ASSOCIATION: Katedra elektroniki przemysłowej politechniki śląskiej, Gliwice (Department of Industrial Electronics of the Silesian Polytechnic, Gliwice)

A resonance method for ...

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D265/D305

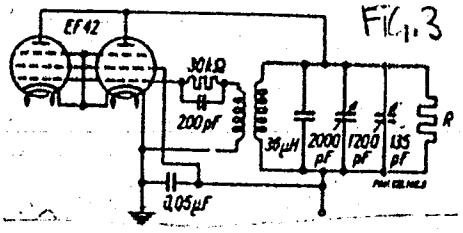

Fig. 3

Meissner's generator used for time-constant measurement of resistors of resistance above 200 Ω

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P/019/61/010/003/001/008
D265/D305

9.3200 (1147, 1159)

AUTHOR: Zagajewski, T.

TITLE: Electrical symmetry of non-linear circuits of symmetrical structure

PERIODICAL: Archiwum elektrotechniki, v. 10, no. 3, 1961, 711-721

TEXT: Symmetrical circuits containing two non-linear elements of real resistance were analyzed to establish the condition of the circuits with respect to a central point or with respect to an axis. The reason for non-retaining the condition of symmetry is basically due to the negative resistance of the non-linear elements. The conditions of electrical symmetry were determined by analyzing the equality of currents and voltages in the relative branches of the circuit. The method illustrated in the article shows a way of determining the conditions of electrical symmetry of circuits with any two non-linear elements. The conditions of symmetry could be considered a criterion of stable behavior of the circuit because only under the condition of symmetry will the circuit behave nor-

Card 1/5

Electrical symmetry of ...

mally. The bridge circuit symmetrical with respect to a central point has the opposite branches identical in pairs. The symmetry condition of such circuit can be expressed by

$$u(I_1) - u(I_1' - I_1) \qquad (2)$$

when $I_1 = I_1'$ (see Fig. 2). The case of an electrical symmetry will exist when the non-linear elements used in the circuit will be of the type $u = k.i^n$ when $n > o$; when the non-linear elements have negative resistance, it is possible to have pairs of values for I_1, I_1' satisfying (2) but different from $I_1 = I_1'$. Drawing load lines on a voltage-current characteristic of the non-linear element having negative resistance, helps to determine the stable and electrically symmetrical working condition. Circuits symmetrical with respect to an axis have the adjacent elements equal in pairs. The

Electrical symmetry of ...

stable electrical symmetry condition can be expressed as:

$$u(I_1) - u(I_1') = R(I_1' - I_1 - 2I_0) \qquad (4)$$

where $I_1 = I_1' = I$, i.e. $I_0 = 0$ (Fig. 4). As previously, non-linear elements with negative resistance may provide solutions when $I_1 \neq I_1'$. For stable conditions of electrical symmetry, one must have $I_1 = I_1'$. Using the above principles, the analysis of asymmetry of a valve trigger circuit is shown. There are 6 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: G. N. Patchett, The theory of non-linear bridge circuit as applied to voltage stabilisers. Journ. Inst. El. Eng. Part III, vol. 93, no. 26, pp. 16 - 22, 1946.

4

Card 3/5

30570
P/019/61/010/003/001/008
D265/D305

Electrical symmetry of ...

ASSOCIATION: Katedra elektroniki przemysłowej politechniki Śląskiej (Department of Industrial Electronics of the Silesian Polytechnic)

SUBMITTED: December 16, 1960

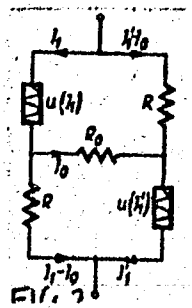

Fig. 2

Symmetrical circuit with non-linear elements in the opposite branches of the bridge

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D265/D305

Electrical symmetry of ...

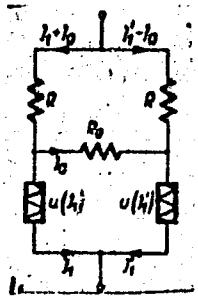

Fig. 4

Symmetrical circuit with non-linear elements in the adjacent branches of the bridge

Card 5/5

CHODOT-MACIEJEWSKA, Halina; DEMBINSKA-WIDY, Ludomira; DZIKOWSKI, Krzysztof; ZAGAJEWSKI, Waclaw

Late diagnosis of thallium poisoning verified by hair examination in a 13-year-old boy. Pol. tyg. lek. 19 no.7:264-266 10 F '64.

1. Z I Kliniki Chorob Dzieci Akademii Medycznej w Poznaniu (kierownik: prof. dr med. T. Rafinski).

621.373.4

5685. THE BUILD-UP TIME OF OSCILLATIONS AND NON-LINEAR DISTORTIONS IN VALVE GENERATORS. T. Zagajewski. Arch. elektrotech. (Warsaw), Vol. 6, No. 3, 395-418 (1957). In Polish, with summaries (2½ pp. each) in English and Russian.

The interdependence of build-up time and non-linear distortion, is in fact the constancy of the product of the two, has been derived from van der Pol's equation and demonstrated experimentally for the cases of negative resistance generators and of the LC generator with feedback. Also shown is the dependence between build-up time and the valve characteristic (fastest for large non-linear coefficients.

A.Szczaniecki

G

Country : POLAND
Category : Organic Chemistry. Synthetic Organic Chemistry

Abs. Jour : Ref Zhur - Khim., No 5, 1959, No. 15416

Author : Janik, B.; Koowa, A.; Zagala, I.
Institut. : Polish AS
Title : Contribution to the Study of Derivatives of 3-Antipyrine. Report II. Transformations of Ethyl Ester of 3-Antipyrine-4-dithiocarboxylic Acid
Orig Pub. : Dissert. pharmac. PAN, 1958, 10, No 2, 143-149

Abstract : The ethyl ester (I) of 1-phenyl-2,5-dimethyl-pyrazolone-3-dithiocarboxylic-4 acid (II) is hydrolyzed with a calculated quantity of an alcoholic solution of KOH (one hour, 100°) to a mixture of K salts of II and 1-phenyl-2,5-dimethylpyrazolone-3-thiocarboxylic-4 acid (III), from which II is separated out in the form of a complex compound with $NiSO_4$. During heating of I (two hours) with an alcoholic KOH solution saturated with H_2S, pure II is

Card: 1/5

Country :
Category : G

Abs. Jour : Ref Zhur - Khim., No 5, 1959, No. 15416

Author :
Institut. :
Title :

Orig Pub. :

Abstract cont'd. : obtained, m.p. 150-151° (from alcohol). From II, during heating with $C_2H_5NH_2$ an anilide of III is formed, m.p. 206-207° (from alcohol), which is oxidized during boiling in water with yellow HgO to anilide of 1-phenyl-2,5-dimethyl-pyrazolone-3-carboxylic-4 acid. A large excess of hot alcohol alkali transforms I into 1-phenyl-2-methyl-4-acetyl-5-mercaptopyrazolone-3 (IV), which is methylated with $(CH_3)_2SO_4$ in an alkaline medium to 1-phenyl-2-methyl-4-acetyl-

Card: 2/5

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Country :
Category :

Abs. Jour : Ref Zhur - Khim., No 5, 1959, No. 15416

Author :
Institut. :
Title :

Orig Pub. :

Abstract cont'd. : 5-methyl-mercaptopyrazolone-3, m.p. 128-129° (from diluted alcohol), hydrolyzed by 10% alcoholic KOH solution and concentrated NH_3 to 5-oxy-1-phenyl-2-methyl-4-acetylpyrazolone-3, m.p. 74-75° (from petroleum ether), and 5-amino-1-phenyl-2-methyl-4-acetylpyrazolone-3 (V), m.p. 223-224° (from ligroin). Under the action of NaN_3, V is transformed into 1-phenyl-2-methyl-4,5-(4-oxypyridazino)-pyrazolone-3 (VI). During the treatment of a solution of the K

Card: 3/5

Country :
Category : G

Abs. Jour : Ref Zhur - Khim., No 5, 1959, No. 15416

Author :
Institut. :
Title :

Orig Pub. :

Abstract cont'd. : salt of III with a solution of I_2 in KI, bis-(1-phenyl-2-methyl-4-acetylpyrazolone-3-yl-4)-disulfide is formed, m.p. 167-168° (from toluene). A mixture of 50 g. of I in 0.2 liter of alcohol and 60 g. of KOH in 0.1 liter of water is heated for one hour at 100° and left standing for 12 hours at 20°; the product is separated out, decomposed with 2 n. HCl and IV is obtained, m.p. 115-116° (from water); phenylhydrazone, m.p. 195° (from alcohol).

Card: 4/5

G - 57

ZAGALA, I.

POLAND / Organic Chemistry. Synthesis. G-2

Abs Jour: Ref Zhur-Khimiya, No 3, 1959, 8337.

Author : Janik, Boleslaw., Kocwa, Aleksander., Zagala, Izabella.
Inst : Polish Academy of Sciences.
Title : Studies of Derivatives of 3-Antipyrine. Communication I. On 3-Antipyrine-4-Carboxylic Acid and 4-Thiocarboxylic Acid.

Orig Pub: Dissert. pharmac. PAN, 1958, 10, No 2, 131-141.

Abstract: By heating (5 hours, 100°) of 3-antipyrine with 40% CH_2O in the presence of K_2CO_3 was prepared 1-phenyl-2,5-dimethyl-hydroxymethyl-pyrazolone-3, MP 160-161° (from toluene), which was oxidized with alkaline solution of $KMnO_4$ to 1-phenyl-2,5-dimethylpyrazolone-3-carboxyl-4 acid (I), MP 144-145° (from dilute alcohol). MP 162-164°

Card 1/3

POLAND / Organic Chemistry. Synthesis. G-2

Abs Jour: Ref Zhur-Khimiya, No 3, 1959, 8337.

Abstract: (from absolute alcohol); methyl ester (ME), MP 196-197° (from chloroform); ethyl ester, MP 123-124° (from ligroin); amide, MP 205-206° (from toluene); ethyl amide, MP 175-176° (from dilute alcohol); anilide, MP 164° (from alcohol); morpholide, MP 145° (from water); hydrazide, MP 149-150- (from ligroin). I was also obtained by oxidation of 4-formyl-3-antipyrine, and in both cases there was isolated from the mother liquors, as byproduct, di-(1-phenyl-2,5-dimethylpyrazolone-3yl-4)-methane, MP 254-255°. By heating of I with $SOCl_2$ was synthesized the not readily purified acid chloride, converted with a 5% alcoholic solution of KSH to 1-phenyl-2,5-dimethylpyrazolone-3-thiocarboxylic acid (II), MP 121-122° (from alcohol). The ME of which, MP 135° (from

Card 2/3

POLAND / Organic Chemistry. Synthesis. C-2

Abs Jour: Ref Zhur-Khimiya, No 3, 1959, 8337.

Abstract: dilute alcohol), on heating with 2 n KOH is converted to I, while on treatment with $NH_2C_2H_5$ it forms the ethyl amide of I. Ethyl ester of II on reacting with NH_3, $NH_2C_2H_5$, and $C_6H_5NH\text{-}NH_2$ forms the amide of II, MP 156-157° (from dilute alcohol, ethyl amide of II, MP 188° (from alcohol), and phenylhydrazide of II, MP 168° (from alcohol). -- D. Vitkovskiy.

Card 3/3

ZAGALAK, B.; PAWELKIEWICZ, J.

Chromatographic separation on phosphate-cellulose of light-sensitive forms of corrinoids produced by propionic acid bacteria. Acta biochim. pol. 9 no.4:315-320 '62.

1. Department of Biochemistry, College of Agriculture, Poznan.
(PROPIONIBACTERIUM) (VITAMIN B 12)

JANICKI, Jozef; SKUPIN, Janusz; ZAGALAK, Boleslaw

A trial of synthesis of a glutathione analogue containing selenium. Rocz chemii 36 no.2:353-358 '62.

1. Laboratory of Food Biochemistry, Department of Agricultural Technology, School of Agriculture, Poznan.

ZACALAK, B.; PAWELKIEWICZ, J.

Synthesis and properties of some analogues of the corrin coenzymes. Acta Biochim. Pol. 11 no.1:49-59 '64.

1. Department of Biochemistry, College of Agriculture, Poznan.

ZAGALAK, B.; PAWELKIEWICZ, J.

Synthesis and properties of analogues of coenzyme B_{12} methylated in the adenosyl group. Acta biochim. Pol. 12 no.2:103-114 '65

1. Department of Biochemistry, College of Agriculture, Poznan.

ZAGALOV, A.

Analysis of the data on fulfilling production norms. Sots. trud 8 no.2:85-86 F '63. (MIRA 16:2)

1. Ispolnyayushchiy obyazannosti nachal'nika Severo-Osetinskoy normativno-issledovatel'skoy laboratorii mashinostroitel'noy promyshlennosti.
(Ossetia, North--Machinery industry--Production standards)

ZAGALOVA, P. I., IONESUAN, A. S., PITENKO, N. F., and SHUTOV, A. I.

"Condition of the Upper Respiratory Tract in Workers of the Electrolytic Shop of 'Elektrotsink' Plant," by Docent N. F. Pitenko and Clinical Physicians A. I. Shutov, P. I. Zagalova, and A. S. Ionesuan, Ear, Throat, and Nose Clinic, Severo-Otinskiy Medical Institute, Gigiyena i Sanitariya, Moscow, Vol 21, No 12, Dec 56, pp 48-49

The authors report the results of medical examinations of a number of workers employed at the electrolytic shop of "Elektrotsink" plant who complained of diseases of the upper respiratory passages. The examinations revealed serious affections of the passages: nosebleeds, ulcerations of the mucous membrane, perforations of the nasal diaphragm, and others, all undoubtedly caused by pungent substances which contaminated the atmosphere in the shop. The shop, it was found, had a large number of electrolytic baths filled with a neutral solution of neutral zinc sulfate. In the course of the electrolytic process, gas bubbles containing toxic substances are formed and evaporate forming a pungent fog which contaminates the atmosphere in the shop. In addition, it is thought that fluorite compounds which are present in the electrolytes in some quantities play their part in causing the affections.

On the basis of the examinations, a number of measures with a view toward improving hygienic-sanitary conditions at the shop and protecting of the workers' health are recommended. Among them are (1) the exclusion from employment in the shop of persons who may be susceptible to diseases of the upper respiratory tract, (2) proper ventilation, (3) the installation of facilities for drawing off the gases directly from the baths, (4) organized periodic washing of the mouth during work hours, and the application of vaseline to nasal mucous membrane before work begins, and (5) organized systematic inspection of the air in the shop.

Sum 1258

ZAGALSKI, Josef; KUS, Henryk

Popliteal cysts. Chir narz. ruchu 13 no.2:147-152 1958.

1. Z III Kliniki Chirurgicznej A. M. we Wroclawiu Kierownik: doc. dr Z. Jezioro. Wroclaw ul. Traugutta 57/59 III Klinika Chirurgiczna A. M.
(KNEE, cysts
popliteal cysts, surg. (Pol))

AKHTEROV, Iosif Samoylovich, arkhitektor-khudozhnik; MILETITSKAYA, Feofaniya Romanovna, arkhitektor; SAPOZHNIKOV, Vladimir Vasil'yevich, inzh.; SVESHNIKOV, Oleg Aleksandrovich, kand. arkhitektury. Prinimali uchastiye: KRYZHANOVSKAYA, A.I., arkhitektor; ZAGAL'SKAYA, O.A., khudozhnik. MAL'CHEVSKIY, V., red.-sostavitel'; GARKAVENKO, L., tekhn.red.; GRISHKO, T., tekhn.red.

[Home furniture; design and construction manual] Mebel' dlia zhil'ia; posobie po proektirovaniiu. Kiev, Gos.izd-vo lit-ry po stroit. i arkhit. USSR, 1960. 295 p. (MIRA 14:4)

1. Akademiya stroitel'stva i arkhitektury USSR. Institut arkhitektury sooruzheniy.
(Furniture)

ZAGAL'SKAYA, Yu.G.; BELOV, N.V.

Crystalline structure of zunyite $Al_{13}(OH)_{18}Si_5O_{20}Cl = [Al_{12}(OH)_{18}.SiO_4].[Al(SiO_4)_4]Cl$. Kristallografiia 8 no.4:533-537 Jl-Ag '63. (MIRA 16:9)

1. Institut kristallografii AN SSSR.
(Zunyite crystals)

BOKIY, G.B.; ZAGAL'SKAYA, Yu.G.; POBEDIMSKAYA, Ye.A.

Crystallochemistry of sulfides. Report No.3: Sulfur, selenium, and tellurium of the AX_2 type. Vest.Mosk.un.Ser. 4: Geol. 16 no.3:18-33 My-Je '61. (MIRA 14:6)

1. Kafedra kristallografii i kristallokhimii Moskovskogo universiteta.
(Sulfur) (Selenium) (Tellurium)

ZAGAL'SKAYA, Yu.G.; BELOV, N.V.

14 Bravais lattices as generators of 230 Fedorov symmetry groups. Zhur. strukt. khim. 5 no.6:878-887 N-D '64. (MIRA 18:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

ZAGALSKI, Jozef; BORON, Zdzislaw; DYMANSKIEWICZ, Adam

Wilms' tumors. Pol. przegl. radiol. 28 no.5[illegible] '64

1. Z Kliniki Radiologicznej Akademii Medycznej we Wroclawiu (Kierownik: doc. dr. med. Z. Kubrakiewicz) i z Kliniki Chirurgii Dzieciecej Akademii Medycznej we Wroclawiu .

SLOWIKOWSKI, Jan; ZAGALSKI, Jozef; BORON, Zdzislaw

Late results of pyloromyotomy in children. Pol. tyg. lek. 20 no.31:1158-1160 2 Ag '65.

1. Z Kliniki Chirurgii Dziecicej AM w Wroclawiu (Kierownik: doc. dr. med. Jan Slowikowski i z Kliniki Radiologicznej AM we Wroclawiu (Kierownik: doc. dr. med. Zbigniew Kubrakiewicz).

BORUN, Zdzisław; ZAGALSKI, Józef

A rare metastasis of [illegible] tumor. Pol. przegl. radiol. 28 no.5:459-472 S-O '64

1. Z Kliniki Radiologicznej Akademii Medycznej we Wrocławiu (Kierownika doc. dr. med. Z. Kutrzeklewicz) i z Kliniki Chirurgii Dziecięcej Akademii Medycznej we Wrocławiu (Kierownika opiekun prof. dr. med. Jaworo).

KAS'YANOV, Sergey Fedorovich; ZAGAL'SKIY, L.N., red.; SAL'NIKOV, A.P., red.izd-va; BEKKER, O.G., tekhn. red.

[Mechanization and automatic control in ferrous metallurgy] Mekhanizatsiia i avtomatizatsiia v chernoi metallurgii. Moskva, Metallurgizdat, 1963. 351 p. (MIRA 16:10)
(Iron and steel plants--Equipment and supplies)
(Automatic control)

ZAGAN,V., ing.; TOMA,P., ing.

Obtaining low temperatures in refrigerating plants based on absorption, a present problem in Rumania. Ind alim anim 11 no.3:68-73 Mr'63

1. Atelierul termo-energetic, colectiv frig - Institutul de proiectare pentru industria chimica.

1(4) RUM/2-60-3-10/36

AUTHORS: Zăgănescu, Florin, Engineer, Belea, C., Engineer, Candidate of Technical Sciences

TITLE: Aircraft Testing During Flight

PERIODICAL: Știință și Tehnică, Seria a II-a, 1960, Nr 3, pp 14-15

ABSTRACT: The author gives a brief description of the principles of aircraft testing in flight. Reference is made to Soviet test pilots, the majority of whom receive a prior training in technical institutes of higher learning. Further reference is made to the Soviet scientists I.I. Shuneyko, specialist in aircraft engines and to N.V. Adamovich, specialist in the stability and maneuverability of aircraft. The Soviet "T-114" and "IL-18" aircraft are also mentioned. There is 1 table and 1 photo.

Card 1/1

ZAGANESCU, Florin, ing., candidat in stiinte tehnice

The Vostok-3 and Vostok-4 in a simultaneous flight. St si Teh Buc 14 no. 8:24-25, 45 Ag '62.

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R/002/62/000/011/003/004
D272/D308

AUTHOR: Zăgănescu, Fl., Engineer

TITLE: 'Mars 1' - on the way to the planet Mars

PERIODICAL: Ştiinţa şi Tehnica, no. 11, 1962, 14-16

TEXT: After discussing the problems encountered in the design of a Mars probe the author gives details on the construction and performance of the Soviet 'Mars 1' satellite launched on November 1, 1962. Special attention is given to the installations for radio communication and radio control both in the space probe and on earth, where special high power and high efficiency tracking stations had to be erected. There are 3 figures.

VB

Card 1/1.

ZAGANESCU, Florin, ing., candidat in stiinte tehnice

The 13th International Astronautical Congress. Rev transport 10 no.1:38-40 Ja '63.

ZAGANESCU, Florin, ing., candidat in stiinte tehnice

What we don't know about Mars. St si Teh Buc 15 no.6:45-46 Je '63.

L 18434-63 EWT(1)/FCC(w)/FS(v)-2/BDS/EEC-2/ES(v)/ES(a)/ES(j)/ES(c)/ES(k)/ES(t)-2 AMD/AFFTC/ASD/AFMDC/ESD-3 Pe-4/Pi-4/Po-4/Pq-4/Pb-4 TT/A/RD/DD

R/0002/63/000/007/0013/0015

ACCESSION NR: AP3003350 (S) 96

AUTHOR: Zagarescu, Florin

TITLE: Valeriy Bykovskiy and Valentina Tereshkova in a new cosmic tandem

SOURCE: Stiinta si tehnica, no. 7, 1963, 13-15

TOPIC TAGS: Space flight, orbital flight, astronaut, biotelemetry

ABSTRACT: A popularized review of the June 1963 dual space flight of the two Soviet cosmonauts is presented. The objective of the flight was to study the effects of the various factors of cosmic flight on the human organism during an extended orbit and to make a comparative medical-biological analysis of these effects on man and woman. The paper outlines the tasks of the two cosmonauts were to perform and describes biotelemetry for prolonged space flight. As opposed to earlier cosmic flights, the dual flight studied the functioning of the heart, respiratory system, biocurrents in the brain, eye movements, and galvanic skin reactions. The paper includes a sketch of the sensing devices and electrodes attached to the bodies of the cosmonauts.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 23 July 63 ENCL: 00

SUB CODE: AS NO REF SOV: 000 OTHER: 000

Card 1/1

ZAGANESCU, Fl., ing., candidat in stiinte tehnice; TAUTH, T., ing. fiz.

Theory of relativity; new checkings and hypotheses. St si Teh Buc 15 no.10:22-26 O '63.

ZĂGĂNESCU, Florin, ing., candidat in stiinte tehnice

Some aerodynamic and flight particularities of hypersonic gliding rockets. Rev transport 11 no. 1: 12-20 Ja '64.

ZAGANESCU, F., ing.

Gallery of the air giants. St si Teh Buc 16 no. 1: 24-25 Ja '64.

RULEA, Gh., conf. univ.; MURARESCU, I., ing.; ZAGANESCU, F., ing., candidat in stiinte tehnice.

Cosmic radio relays. St si Teh Buc 16 no.9:10-14,18 S'64

AUTHOR: Zaganescu, F. (Doctor, Engineer)

ORG: none

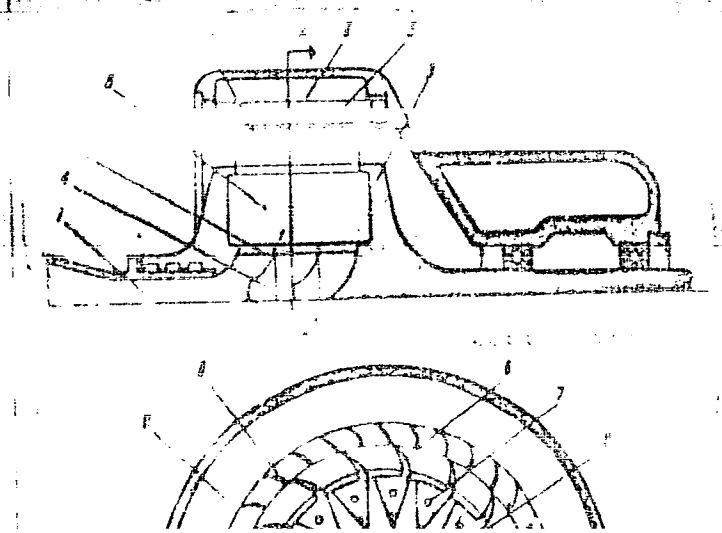
TITLE: Low-pressure turbine

SOURCE: Stiinta si tehnica, no. 5, 1966, 26

TOPIC TAGS: gas turbine, engine turbine system, turbine blade, blade profile, low pressure turbine

ABSTRACT: A recent invention of C. Teodorescu-Tintea deals with the generation of mechanical energy at the shaft of a turbine. The process is based on the principle of the so-called Teodorescu-Coanda blade system (see Fig. 1). The working fluid penetrates into the interior (2) of the rotor body (3) through the intake channel (1), passes through guide system (4), and escapes in the form of plane jets at the backs of the curved blades (6) through the longitudinal peripheral slits in the blade ring (5). Due to the Counda effect, the jets deviate from their initial direction and flow around the backs of the blades where very low pressure zones develop. The pressure difference [illegible] forces which, projected tan[illegible] leaving the rotor blades [illegible]

Card 1/2



through the fixed nozzle box (8), from there into the receiver (9), and finally, they enter the discharge channel.

turbine is said to have superior internal cooling and a high efficiency rating. The fact that it performs at higher temperatures than other turbines makes this for use in power installations and aircraft. In its present stage of development, the low-pressure turbine can be used for driving certain types of pneumatic machine tools and for mechanizing transfer op-

SUB CODE: 10/ SUBM DATE: none
ATD PRESS 4255

Fig. 1. Schematic diagram of the low-pressure turbine.

Card 2/2

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ACC NR: AP6032682 SOURCE CODE: RU/0002/66/000/009/0010/0010

AUTHOR: Zeganescu, Fl. (Doctor; Engineer)

ORG: none

TITLE: Pneumonics competes with electronics

SOURCE: Stiinta si tehnica, no. 9, 1966, 10-11

TOPIC TAGS: pneumonics, pneumatic computer, pneumatic control, pneumatic control system, automation equipment, missile guidance equipment, rocket engine component

ABSTRACT: The idea of using jets in amplification, command, and control operations is not new, although the practical application of interacting air jets was suggested only in 1954, by the German engineer V. Ferner. Extensive American and Soviet research [illegible] importance of pneumonics which, in some applications, offers advantages not found in electronics. Pneumonic elements can be divided into interaction jet devices and devices employing jets deviated by the "Coanda effect." Pneumonic elements presently are confined mainly to binary operations. Fig. 1. shows an automatic optimizer consisting of compact pneumonic elements designed by the Institute of Automation and Telemechanics USSR. Pneumonic commands propagate at a relatively low speed in comparison with electronic commands. For many purposes, however, this lower speed is quite sufficient. The absence of an explosion risk in pneumonic commands makes them highly suitable for use in the

Card 1/3

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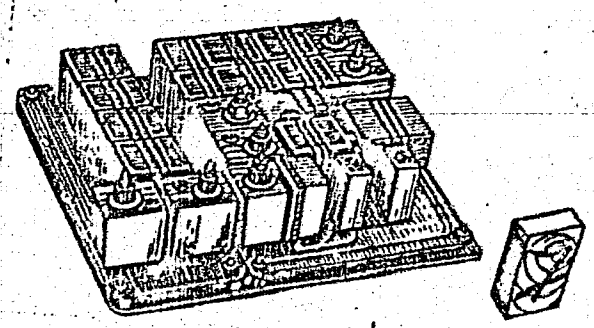

Fig. 1. Automatic optimizer

chemical and oil industries. Moreover, pneumonic elements can function at temperatures as high as 800—1000C, temperatures which no electronic device could withstand. This advantage would be particularly important in rocket engine systems. The operation of pneumonic elements is not affected by electromagnetic or nuclear radiations. Low production cost is another advantage of such elements. Studies conducted at the Institute of Automation and Telemechanics have revealed that the cost of an adding machine using 10 decimal points designed with pneumonic memory elements, is only one-twenty-fifth that of a transistorized computer, and one-sixtieth [illegible] ferrite-based computer [illegible]

[illegible] guiding missile guidance [illegible] application of pneumonics is [illegible] device has a control jet [illegible] 25 g/min capable of directing a tail

Card 2/3

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ACC NR: AP6032662

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[illegible] of 16.5 kg/min which, in turn, is used to deflect a reactive jet. Current research in the field is aimed at better understanding of fundamental processes [illegible] elements, development of techniques for the large-scale production of pneumonic units, and [illegible] for pneumonic devices. The disadvantages of pneumonics are that jet elements can only be [illegible] be introduced for industrial [illegible] amplification elements [illegible] are not easily adjustable, and [illegible] completely understood. [illegible] the various phenomena associated [illegible]
art. has: 1 figure.

SUB CODE: 13, 20, 21 SUBM DATE: none/ ATD PRESS: 5095

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RUMANIA

ZAGANESCU, Florin, Eng, Candidate in Technical Sciences (Candidat in Stiinte Tehnica) [affiliation not given]

"A New Brilliant Victory of Soviet Cosmonautics. Valery Bikowski and Valentina Tereshkova in a New Cosmic Tandem."

Bucharest, Stiinta si Tehnica, Vol 15, No 7, Jul 63, pp 13-15.

Abstract: A non-technical description of the orbital flight of Vostok-5 and Vostok-6 in June 1963. The article describes the various tasks that the cosmonauts performed in space and reports on the bio-physiological data returned to earth by biotelemetry. Includes 1 table and 3 illustrations.

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R/002/60/000/009/003/003
A125/A026

AUTHOR: Zăgănescu, Fl., Engineer

TITLE: The Earth-Space-Earth Flight

PERIODICAL: Ştiinţă şi Tehnică, 1960, No. 9, pp. 29-30 and 41

TEXT: Subject article deals with the flight of the Soviet biosatellite performed on August 19, 1960. According to Professor Gh. Pokrovskiy the moment of the launching was selected because of the favorable conditions for a manned flight in the perisolar space. The almost circular orbit had an apogee of 339 km and a perigee of 306 km. The inclination angle against the equatorial plane was 65° and the initial orbiting time 90 min and 36 sec. The dogs Belka and Strelka provided with pressure suits, 40 mice, two rats, insects, plants, seeds, microorganisms, microbes, etc. were on board. A constant temperature of 20°C and a pressure of 760 mm was in the capsule. The air was regenerated by single-cell algae. Water vapors and carbon dioxide were removed and the animals were fed automatically. The suspension and position of the capsule was studied in function of flight direction and speed. The materials used provided protection against cosmic solar radiations. According to Academician Topchev, all specialists will

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The Earth-Space-Earth Flight

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A125/A026

be informed on the results of this flight. The behavior of the two dogs was watched by radio and TV. The physiological data appearing especially during the recovery flight were recorded. It could be established that the last part of the flight was performed without any harm to the animals. Radiocommunication was accomplished on three channels: teleocntrol, telemetering and television transmission. A 19,995 Mc "Signal" radio was installed on board. Data transmitted by this radio were compared by an electronic computer with precalculated values. The results of the physiological, physical and electrical measurements were transmitted to the Earth as electric currents of variable intensity. Since these results could not be transmitted constantly, they first were recorded on a magnetic tape. The measuring instrument, the memorizing device and the periodic switching of the transmitter were controlled from the ground. The TV images were synchronized with the telemetric data. During the recovery flight, the behavior of the dogs' organism was recorded by an automatic autonomous system installed on board of the space ship. The author finally mentions several space ship recovery and braking systems, without accurately knowing the one used by the Soviets. The ship landed only 10 km away from the preestablished landing point. There are 4 figures.

Card 2/2

CURELEA, S., ing.; ZAGANESCU, Fl., ing., candidat in stiinte tehnice

Cybernetics and cosmos applications. St si Teh Buc 14 no.12: 40-41 D'62.

69727

J.2000
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R/002/60/05/046/052
D0021/D3001

AUTHOR: Zăgănescu, Fl., Engineer

TITLE: Recovery of Satellites

PERIODICAL: Ştiinţă şi Tehnică, 1960, Nr 5, Supplement, p 1, col 1-3, ctd p 2, col 1-3

ABSTRACT: Soviet science and engineering created the prototype of a cosmic ship, the satellite-space-ship, which was to verify all necessary technical aspects, including the launching and the re-entry of man from space. The satellite-space-ship which was launched on 15 May 1960, was provided with necessary apparatuses to ensure full safety and survival during space flight. Though the 2.5-t capsule will not be recovered, it is assigned for various operations which are controlled by orders from the Earth. The accomplishment of perfect re-entry of an air-tight

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Recovery of Satellites

capsule[3] is the problem to be solved. A tentative solution was worked out from the data collected by the "Sputniks", from the powerful Soviet rocket launched into the Pacific Ocean and from the cosmic ship last launched with a weight of 4,540 kg. The article further deals with the general theory of aerodynamics of satellites and the system of cosmic braking. There is 1 figure.

Card 2/2

ZAGANESCU, Fl., ing., candidat in stiinte tehnice

On the way toward the planet Mars: "Mars 1." St si Teh Buc 14 no.11:14-16 N'62.

CURELEA, S., ing.; ZAGANESCU, Fl., ing., candidat in stiinte tehnice.

Application of cybernetics and the cosmos. St si Teh Buc 14 no.12:40-41 D'62.